

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In the Patent Application of:

GIANPIERO SANTACATTERINA ET AL.

Serial No.: 10/757,891

Filed: January 15, 2004

For: A PROCESS FOR MANAGING AND CURTAILING POWER DEMAND OF APPLIANCES
AND COMPONENTS THEREOF, AND SYSTEM USING SUCH PROCESS

Group Art Unit: 2121

Examiner: Norton, Jennifer L.

APPEAL BRIEF

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an Appeal Brief pursuant to 37 C.F.R. §41.37 in support of Applicants' appeal of the second Rejection of the Examiner, mailed March 31, 2006, of claims 1-14. Each of the topics required by 37 C.F.R. §41.37 is presented herewith and is labeled appropriately.

I. REAL PARTY IN INTEREST

Whirlpool Corporation, having offices in Benton Harbor, Michigan ("Whirlpool" or "Assignee") is the real party in interest of the present application. An assignment of all rights in the present application to Whirlpool was executed by the inventors and recorded in the U.S. Patent and Trademark Office at Reel 014899, Frame 0047.

II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences related to the present application of which Appellants, Appellants' legal representatives, or Assignee are aware.

III. STATUS OF CLAIMS

Claims 1-10 were in the application as filed. Claims 11-14 were added. Claims 1-14, which are presented in the Appendix, are pending in the application and have been twice rejected by the Examiner. Accordingly, Appellants hereby appeal the rejection of claims 1-14.

IV. STATUS OF AMENDMENTS

No amendments were filed subsequent to the third rejection, and all amendments have been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

As called for in claim 1, the claimed invention comprises a process for managing the total power absorbed of one or more appliances.¹ The process comprises the steps of assessing for each appliance an energy consumption profile of the one or more appliances corresponding to its setting, *Application*, p. 8, ¶ [0030], ln. 1-8, Fig. 7, summing the energy consumption profiles to determine if their sum leads to one or more peaks in power demand, *Application*, p. 8, ¶ [0030], ln. 8-9, Fig. 7, and providing one or more new energy consumption profiles to the one or more appliances for leveling the total power absorbed by the one or more appliances. *Application*, p. 8, ¶ [0030], ln. 8-9, Fig. 7; p. 10, ¶ [0037], ln. 2-3 – p. 11, ¶ [0037], ln. 1-3, Fig. 9.

¹ 37 CFR §41.37(c)(1)(v) requires reference to the specification by page and line number. The Application was filed electronically using a version of the U.S. Patent Office software that did not accommodate line numbers. Thus, references are given by page number, paragraph number, and the line number of the referenced paragraph.

The claimed invention also comprises a system for managing and curtailing power absorbed of one or more appliances, as called for in claim 6. Each appliance has a user interface connected to a control unit for setting working parameters of the appliance. *Application*, p. 5, ¶ [0021], ln. 1-4. The control unit is adapted to assess, for each appliance, an energy consumption profile corresponding to its setting. *Application*, p. 8, ¶ [0029], ln. 1-4, p. 9, ¶ [0031], ln. 1-15, p. 10, ¶ [0033], ln. 1-3, p. 10, ¶ [0037], ln. 2-3 – p. 11, ¶ [0037], ln. 1. The control unit is adapted to sum the energy consumption profiles in order to check if their sum leads to one or more peaks in the power demand and to provide one or more new energy consumption profiles in order to level or reduce the total power absorbed by the one or more appliances or components thereof. *Application*, p. 8, ¶ [0030], ln. 8-9, Fig. 7, p. 8, ¶ [0030], ln. 8-9, Fig. 7; p. 10, ¶ [0037], ln. 2-3 – p. 11, ¶ [0037], ln. 1-3, Fig. 9.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

In the Office Action of March 31, 2006, the Examiner rejected claims 1-14, as follows:

- Claims 1, 2, 4, 6, 7, 9, and 11-14 under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Patent No. 5,572,438 to Ehlers et al. (“Ehlers ‘438”). Appellants disagree with the Examiner’s assertion that the Ehlers ‘438 reference anticipates claims 1, 2, 4, 6, 7, 9, and 11-14.
- Claims 3 and 8 under 35 U.S.C. §103(a) as allegedly unpatentable over Ehlers ‘438 in view of U.S. Patent No. 4,612,619 to Culp (“Culp ‘619”). Appellants disagree with the Examiner’s assertion that the combination of the Ehlers ‘438 and Culp ‘619 references render claims 3 and 8 obvious to one skilled in the art.
- Claims 5 and 10 under 35 U.S.C. §103(a) as allegedly unpatentable over Ehlers

(..continued)

‘438 in view of U.S. Patent No. 6,519,509 to Nierlich (“Nierlich ‘509”). Appellants disagree with the Examiner’s assertion that the combination of the Ehlers ‘438 and Nierlich ‘509 references render claims 5 and 10 obvious to one skilled in the art.

VII. ARGUMENT

A. Claims 1, 2, 4, 6, 7, 9, and 11-14 are not anticipated by U.S. Patent No. 5,572,438 to Ehlers et al.

Ehlers ‘438 discloses a local area communications network (LAN) 20 comprising a plurality of power-using devices, or “loads,” each of which is connected into the LAN through a control module 24. An external communications unit 12 comprises a communications interface unit 16 and a first microcomputer 18. A second microcomputer 22 is connected to the LAN, along with condition sensors 26, such as temperature or motion sensors. The microcomputers 18, 22 can communicate with each other, and with the sensors 26 and control modules 24. The first microcomputer 18 can also communicate with a power supply company which supplies power to the loads through power distribution mains 15. An energy usage meter 14 is connected to the mains 15 for monitoring energy delivered to the loads. *Ehlers ‘438, col. 8, ln. 15-41.*

The control module 24 may contain a relay or switch, i.e. a circuit breaker, to disconnect the load from the power mains 15 upon command or upon occurrence of a power outage. *Ehlers ‘438, col. 3, ln. 57-61.* The control module 24 may also contain a current monitor for determining whether a connected load is drawing current, or a power monitor for monitoring the power consumed by the load. *Ehlers ‘438, col. 3, ln. 61-65.* The second microcomputer 22 enables a customer to set load operational parameters and query the system as to power usage information. *Ehlers ‘438, col. 4, ln. 50-53.* Management of the loads comprises turning the loads on or off according to a user-provided timing schedule or price-driven customer-set conditions. *Ehlers ‘438, Abstract, ln. 3-6; col. 11, ln. 36-38; col. 15, ln. 28-38; col. 27, ln. 58-*

col. 28, ln. 28. The power utility can also initiate a “load-shedding” turn-off command (and subsequent turn-on command) should conditions require the load on the entire power grid be reduced. *Ehlers ‘438, col. 25, ln. 9-23; col. 29, ln. 57-63.*

It is clear from the Ehlers ‘438 specification that management of the loads is limited to turning on/off the power to a load as controlled by algorithms utilizing a few selected criteria, such as the historical energy consumption of the load, the current unit cost of operating the load, and emergency events imposing an unexpected load on the power grid, to selectively turn one or more loads on or off. For example, the Ehlers ‘438 specification states that

“There exists a need for an automation system for monitoring energy (power) consumed not only by a residential or commercial utility customer as a whole, but also by specific loads operated by the customer. A need further exists for an automation system which is easily operated by a utility customer to permit the customer to control operation of such loads. Desirably, the system will permit the customer **to program loads to function or not function** in response to energy rate information supplied by the power company and parameters supplied by the customer. In addition, there exists a need for a system that also permits the power company to control selectively such loads.” *Ehlers ‘438, col. 3, ln. 35-47* (emphasis added).

The microcomputers 18, 22 operate software programs to manage the loads, and to communicate with the devices comprising a part of the LAN and the power utility. The first computer 18 operates a program referred to as CPEU_PGM 34. *Ehlers ‘438, col. 10, ln. 13-16.* The second computer 22 operates a program referred to as USER_PGM 36. *Ibid.* CPEU_PGM 34 is the main control program. It initiates load (current and power) monitoring, processes historical data, controls reading of the energy usage meter 14, executes requested load turn-on/turn-off events, and monitors communications from the utility company. *Ehlers ‘438, col. 10, ln. 16-20.* USER_PGM 36 is a customer's interface to the LAN. It assembles historical data

from CPEU_PGM 34 and formats that data into reports for the customer, permits the customer to schedule timed turn-on/turn-off events, and transmits those events to CPEU_PGM 34 for execution. *Ehlers '438, col. 10, ln. 25-31.*

CPEU_PGM 34 comprises six modules: 1) a Process Data Requests module; 2) a Process Load Shedding Requests module; 3) a Receive Current Energy Pricing Information module; 4) a Poll and Store module; 5) a Control Devices module; and 6) a Perform Scheduled Events module. *Ehlers '438, col. 10, ln. 46-51.* USER_PGM 36 comprises eight modules: 1) a Synchronize with CPEU_PGM module; 2) a Display History and Menus module; 3) an Operator Choice module; 4) a Display Current Usage Monitor module; 5) an Add Controlled and Reporting Devices module; 6) a Delete Devices module; 7) an Add/Delete On/Off Events module; and 8) a Display Reports module. *Ehlers '438, col. 11, ln. 14-51.*

The Process Data Requests module manages the handling of, and response to, data input and output requests from the second microcomputer 22, including scheduling changes, device additions and deletions, and requests for historical data, and supplies to the second microcomputer 22 information requested for generating reports to the customer.

The Process Load Shedding Requests module processes load shedding requests as they arrive from the utility company, and generates corresponding control messages to the loads instructing the loads to turn off or to resume normal operation.

The Receive Current Energy Pricing Information module receives energy pricing information from the utility company or from the customer.

The Poll and Store module polls the meter 14 to get a current reading of demand and accumulated energy consumption since the last prior poll, polls monitored devices, and stores the results.

The Control Devices Using Pricing Information module implements conditional device-

controlling operations which are utility-rate-dependent.

The Perform Scheduled Events module performs scheduled on/off events based on a user-provided timing schedule or price-driven customer-set conditions, unless the performance of those events is countermanded by load-shedding operations in progress. Scheduled events include, for example, turning loads on, turning loads off, resetting thermostats, and changing the brightness of lighting by altering dimmer settings.

The Synchronize with CPEU_PGM module manages all communications with CPEU_PGM program 34.

The Display History and Menus module displays a currently selected computer display which displays reports of historical data from CPEU_PGM 34, and customer-input on/off event schedules sent to USER_PGM 36.

The Operator Choice module receives operator input and displays operator choices on the display, and initiates the Add Controlled and Reporting Devices module, the Delete Devices module, the Add/Delete On/Off Events module, or the Display Reports module.

The Display Current Usage Monitor module operates from or within the Operator Choice module, and shows, in a portion of the display screen, the current total power usage for all loads, and other selected information. At least a portion of the remainder of the display shows operator choices from the Operator Choice module.

The Add Controlled and Reporting Devices module adds to the system a device (i.e., a load) which is to be controllable by or which is to report to the system.

The Delete Devices module removes from the system a device (i.e., load) which is to be controllable by or which is to report to the system.

The Add/Delete On/Off Events module records in the system control store any changes

as to timed or conditional events for turning loads on or off. If the device is one which can, in addition to being turned on and off, also be dimmed, then an on/off event also can include a field to set the dimming level (e.g., percentage of full scale) for the device.

The Display Reports module displays on the output device of the second microcomputer 22 any reports requested by the user.

Information about the loads and about the energy and power usage of those loads, and of the premises containing those loads as a whole, is maintained in data structures located in memory in the first microcomputer 18. A first data structure 42, identified as CUSTOMER, contains information about the customer, such as the energy rate or rate code under which the customer is charged; the customer's name; the customer's address; and the customer's account number.

A second data structure 44, identified as DEVICE, contains information about each load to be monitored or controlled. This includes the power rating for the device, i.e. the power in watts that the device normally consumes when it is turned on; the current the device normally consumes when it is turned on; the voltage across the device when it is turned on; the power factor for the device if it is a reactive load; a code indicating the kind of load the device is (e.g., resistive, inductive or fluorescent); the priority code for the device, to be used in load shedding operation; several device address codes; a description of the device; a textual statement of the device location; the current on/off or other status of the device; a count representing how long (cumulatively) the device has been turned on for the current day; a count representing how long (cumulatively) the device has been turned on for the current month; a count representing how long the device was turned on during the prior month; a count representing how many hours the device has been turned on for the year, to the current date; and a flag.

A third data structure 48, identified as COMMERCIAL, can also be used. This data structure may contain information such as the consumption calculations for the device over a

chosen interval; an identification of the interval by interval number or by time (e.g., year, month, day, hour, and location within the hour); the interval size, in minutes; the number of minutes the load was turned on during the interval, or, equivalently, the time(s) the load was turned on or turned off during the interval; the total power demand during the interval (i.e., kwh times 60 minutes divided by the interval length, in minutes); the relevant meter identification number, in the event there are multiple meters at the premises; the meter reading at the end of the interval; and if the interval length is not fixed, the length of the interval.

Additional data structures include a meter history table (METER) 52, a device history table (DEVICE HISTORY) 54 for at least each device whose power consumption is monitored, and a TIMED (i.e., scheduled) EVENTS list 56.

The METER table 52 may contain information pertinent to each meter reading. This information may include a house (or commercial premises) code; a unit code; in a first table having twenty-four entries-one for each hour of the day, the first meter reading for the corresponding hour; in a second such table, the last meter reading for the corresponding hour; in a third table, by hour, the accumulated energy used that month, exclusive of the current day; in a fourth table, the total energy used, by hour, for all of the previous month; and in a fifth table, by hour, the total energy used for the entire year to the current date but exclusive of the current day.

The DEVICE HISTORY table 54 stores, per measurement interval, a record containing data arranged in a predetermined pattern, containing one or more of the following: the measured voltage; in-phase current; reactive current; kwh consumed in the interval; kvah consumed in the interval; and, for reactive loads, kvarh consumed in the interval.

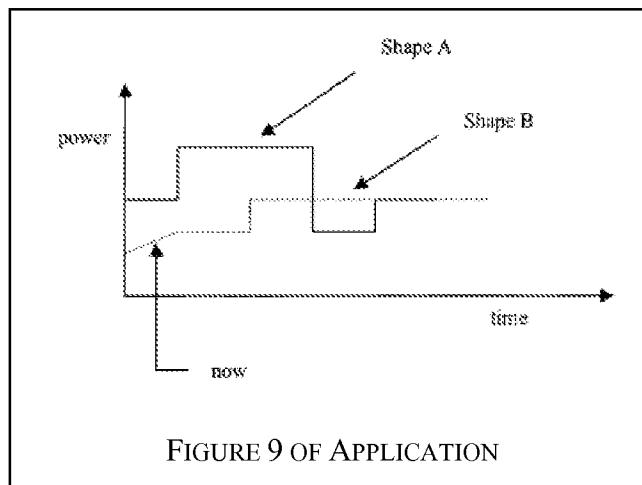
Both the METER table 52 and the DEVICE HISTORY table 54 are used for historical data, i.e. data related to energy used during a preceding time period. Depending on how the load, or appliance, is utilized, the energy usage, and the data in the METER table 52 and the DEVICE HISTORY table 54 can vary from time period to time period.

1. Rejection Under 35 U.S.C. §102(b)

The claimed invention is not anticipated under §102 unless each and every element of the claimed invention is found in the prior art. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 231 USPQ 81, 90 (Fed. Cir. 1986). To anticipate, a single reference must teach each and every limitation of the claimed invention. *Eolas Technologies Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1335; 73 U.S.P.Q.2D (BNA) 1782 (Fed. Cir. 2005). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The rejection of claims 1, 2, 4, 6, 7, 9, and 11-14 fails to satisfy these standards, and should be overturned.

Group A. Claims 1, 2, 4, 11, and 12

Claim 1 is patentable over Ehlers '438 because each and every element of claim 1 is not found in Ehlers '438. Claim 1 calls for a process for managing the total power absorbed of one or more appliances. The claimed process comprises, in pertinent part, assessing for each appliance an energy consumption profile, which is the power absorbed by the appliance as a function of time during operation of the appliance, summing the energy consumption profiles of the appliances to determine if their sum leads to one or more peaks in power demand, and providing new energy consumption profiles to the appliances for leveling the total power absorbed by the one or more appliances. This methodology is not disclosed in Ehlers '438.



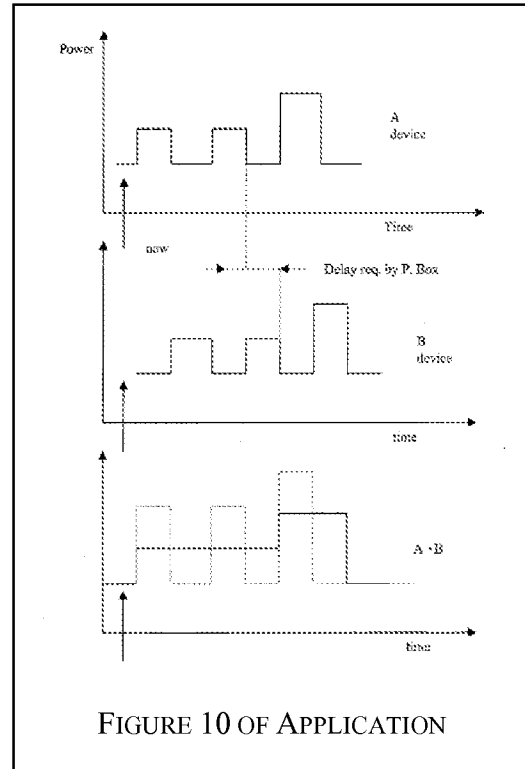
Ehlers '438 does not disclose assessing for each appliance, or load, an energy

consumption profile. In the Application, "energy consumption profile" has a very specific meaning. Figure 9 of the Application illustrates a pair of energy consumption profiles for a load device. The energy consumption profile is thus the consumed power over time for an appliance. One of the profiles in Figure 9 is an energy consumption profile without regard to energy efficiency, i.e. a "default" energy consumption profile. The other profile is an alternate power consumption profile for utilization by an appliance which results in reduced power consumption when so required in the manner described in the Application.

Figure 10 illustrates how two energy consumption profiles of different appliances can be shifted according to the invention in order to have a total energy consumption profile with lower energy demand. In both cases illustrated in Figures 9 and 10, an energy consumption profile is a graphical representation of power versus time.

Ehlers '438 does not disclose or utilize an energy consumption profile in the system described therein. As Ehlers '438 does not even disclose an energy consumption profile, Ehlers '438 cannot possibly anticipate the claims.

Ehlers '438 discloses a multiple computer-based communication network for determining and initiating the on and off states of power consuming devices. Nothing in Ehlers '438 even suggests the establishment of power consumption profiles for the power consuming devices, the summing of such profiles, or the generation of new energy consumption profiles for leveling the total power consumed by the power consuming devices. The system disclosed in Ehlers '438 utilizes energy data, but only historical data, and only for determining which loads should be



turned on or turned off under particular circumstances. The system disclosed in Ehlers '438 does not utilize energy consumption profiles as called for in the claims to determine which loads should be turned off or on, and when.

The Examiner's assertions that cited figures and portions of Ehlers '438 disclose the elements of claim 1 are in error and mischaracterize the teaching of Ehlers '438. The cited material is addressed to completely unrelated matters, and is simply irrelevant to the claimed invention.

For example, the Examiner cites Figure 4, element 48 as disclosing the claim 1 element "assessing for each appliance an energy consumption profile." However, Figure 4 has nothing to do with an energy consumption profile. Figure 4 is a block diagram and flow chart for the software programs executed by the first microcomputer 18 and the second microcomputer 22. Significantly, there is no element 48 shown in Figure 4. Moreover, as discussed above, Ehlers '438 does not disclose or in any way refer to an energy consumption profile. Thus, the Examiner's citation does not support the Examiner's position.

The Examiner also cites column 3, lines 61-67, column 5, lines 45-49, column 10, lines 17-20 and 25-31, column 11, lines 30-32 and 53-59, column 12, lines 21-59, column 13, lines 64-67, and column 14, lines 1-14, as disclosing the claim 1 element "one or more appliances corresponding to its setting." Column 3, lines 61-67, provides that a control module may contain a current monitor or a power monitor, energy consumption may be calculated from power consumed by a load, and that the power monitor may place data regarding power being consumed by a load on a bus in response to a query message. Column 5, lines 45-49, provides that monitoring power consumption provides a customer with information to enable the customer to make decisions about load utilization. Column 10, lines 17-20 and 25-31, provides that CPEU_PGM is the main control program and initiates load monitoring, stores historical data, performs watt-hour meter reading, executes requested load turn-on/turn-off events, and monitors communications from the utility company, and that USER_PGM is the customer's interface to

the system and assembles historical data from CPEU_PGM, formats the data into reports for the customer, permits the customer to schedule timed turn-on/turn-off events, and transmits those events to CPEU_PGM for execution.

Column 11, lines 30-32 and 53-59, provides that the Add Controlled and Reporting Devices module adds a load to the system which is to be controllable by or which is to report to the system, and that information about loads at the customer premises and about energy and power usage of the loads and of the premises as a whole is maintained in a data structure or structures physically located in memory. Column 12, lines 21-59, describe the DEVICE data structure previously discussed above. Column 13, lines 64-67, and column 14, lines 1-14, describe the DEVICE HISTORY table previously discussed above.

None of these cited statements in Ehlers '438 makes any reference whatsoever to an energy consumption profile, or assessing for an appliance an energy consumption profile corresponding to the appliance's setting, as called for in claim 1. The most that these statements provide are bits and pieces of what the Examiner erroneously attempts to fabricate as an energy consumption profile. However, the Examiner's attempt utterly fails to satisfy the legal requirement that a single reference teach each and every limitation of the claimed invention, and that the reference disclose the identical invention in as complete detail as is contained in the claim. Ehlers '438 does not disclose an energy consumption profile in as complete detail as is contained in claim 1. Thus, Ehlers '438 cannot anticipate claim 1.

The Examiner cites column 2, lines 58-65, column 3, lines 1-3 and 36-48, column 5, lines 45-49, column 13, lines 46-63, column 14, lines 60-67, column 15, lines 1-11, column 23, lines 32-34, and column 30, lines 5-8, as disclosing the claim 1 element "summing the energy consumption profiles to determine if their sum leads to one or more peaks in power demand." Column 2, lines 58-65, and column 3, lines 1-3, describe a current surge and large transient voltage spike which can occur when power is restored to a large disconnected load after a power outage from a natural event. Column 3, lines 36-48, describe the need for an automation system

for monitoring energy consumed by a utility customer and by specific loads, which is easily operated by a customer, which permits the customer to program loads to function or not function in response to energy rate information and customer-supplied parameters, and which permits the power company to selectively control such loads. Column 5, lines 45-49, provides that monitoring power consumption provides a customer with information to enable the customer to make decisions about load utilization.

Column 13, lines 46-63, describes the METER table previously discussed above. Column 14, lines 60-67, and column 15, lines 1-11, discuss the communication between the microcomputers 18, 20, and between the first microcomputer 18 and the control modules, sensors, the meter 14, and with the power company relative to real-time energy rate broadcasts, load shedding requests, power outage reports, low-voltage condition reports, customer usage reports, and other data. Column 23, lines 32-34, provides that power levels in each branch of a circuit are accumulated by a microcontroller to determine the energy consumed in each branch. Ehlers '438 thus maintains a running total of the **instantaneous** energy consumed. These running totals are maintained on a branch-by-branch basis or what would be an appliance-by-appliance basis when there is a single appliance on each branch. That is, Ehlers '438 maintains a cumulative or running total of the instantaneous power consumption for each appliance. As such, Ehlers is incapable of teaching or suggesting the summing of energy consumption profiles, which are instantaneous energy consumptions at discrete times, because the Ehlers '438 running total is completely different than an energy consumption profile. In essence, the system described in Ehlers '438 is historically focused in that it considers only current and past power consumption. It is not forward looking like the claimed invention, which considers an entire predefined power consumption profile. Column 30, lines 5-8, provides that prioritizing of loads by a customer can help reduce peaks and allow the utility company to avoid the need to build additional generating capacity or to buy power, helping to reduce energy rates.

None of these cited statements in Ehlers '438 makes any reference whatsoever to

summing energy consumption profiles to determine if their sum leads to one or more peaks in power demand, as called for in claim 1. Again, the most that these statements provide are bits and pieces of what the Examiner erroneously attempts to fabricate as summing of energy consumption profiles to determine if their sum leads to a peak in power demand. However, the Examiner's attempt utterly fails to satisfy the legal requirement that a single reference teach each and every limitation of the claimed invention, and that the reference disclose the identical invention in as complete detail as is contained in the claim. Ehlers '438 does not disclose summing energy consumption profiles to determine if their sum leads to one or more peaks in power demand in as complete detail as is contained in claim 1. Thus, Ehlers '438 cannot anticipate claim 1.

Finally, the Examiner cites column 3, lines 36-48, and column 25, lines 9-31, as disclosing the claim 1 element "providing one or more new energy consumption profiles to the one or more appliances for leveling the total power absorbed by the one or more appliances." Column 3, lines 36-48, describe the need for an automation system for monitoring energy consumed by a utility customer and by specific loads, which is easily operated by a customer, which permits the customer to program loads to function or not function in response to energy rate information and customer-supplied parameters, and which permits the power company to selectively control such loads. Column 25, lines 9-31, discusses a process of "load shedding" involving broadcasting a command for one or more devices to turn off. The devices are selected based upon a preselected priority level, which is evaluated by the load control module to determine whether the device should be turned off. A process of turning loads back on is also described.

Again, none of these cited statements in Ehlers '438 makes any reference whatsoever to providing one or more new energy consumption profiles in order to level the total power absorbed by an appliance, as called for in claim 1. These statements have nothing to do with energy consumption profiles, or with providing new energy consumption profiles. The

Examiner's attempt to construct this element of claim 1 out of these statements utterly fails to satisfy the legal requirement that a single reference teach each and every limitation of the claimed invention, and that the reference disclose the identical invention in as complete detail as is contained in the claim. Ehlers '438 does not disclose providing new energy consumption profiles in order to level the total power absorbed by an appliance in as complete detail as is contained in claim 1. Thus, Ehlers '438 cannot anticipate claim 1.

Claims 2, 4, 11, and 12 depend, directly or indirectly, from claim 1, and are patentable over Ehlers '438 for the same reasons.

Group B. Claims 6, 7, 9, 13, and 14

Claim 6 is similar to claim 1 and, in pertinent part, calls for a system for managing and curtailing the power demand of one or more appliances. Each appliance has a user interface connected to a control unit, which is adapted to assess an energy consumption profile for each appliance. The control unit is adapted to sum the energy consumption profiles in order to check if their sum leads to one or more peaks in the power demand, and to provide one or more new energy consumption profiles in order to level or reduce the total power absorbed by the appliances. For the same reasons discussed above, claim 6 is patentable over Ehlers '438 because Ehlers '438 does not disclose assessing for each appliance an energy consumption profile, summing the energy consumption profiles of the appliances to determine if their sum leads to one or more peaks in power demand, or providing new energy consumption profiles to the appliances for leveling the total power absorbed by the appliances.

Because claims 7, 9, 13, and 14 depend, directly or indirectly, from claim 6, they are patentable over Ehlers '438 for the same reasons.

The rejection of claims 1, 2, 4, 6, 7, 9, and 11-14 under 35 U.S.C. §102(b) should be overturned.

B. Claims 3 and 8 are not obvious over U.S. Patent No. 5,572,438 to Ehlers et al. in view of U.S. Patent No. 4,612,619 to Culp.

Culp '619 discloses a plurality of loads controlled by a duty cycle routine which determines on and off times for each load. During a preselected duty cycle time interval, a gap time, or time during which loads are in an "ON" condition, is determined based upon the off time for each load, the off time kilowatt value for each load, and the duty cycle time interval. Loads are then turned off by turning the load with the greatest off time kilowatt rating off, followed by the load with the smallest off time kilowatt rating, followed by the load with the next greatest off time kilowatt rating, followed by the load with the next smallest off time kilowatt rating, and so on. The routine effectively spaces the on and off times, and controls the loads according to their power consumption values, in order to avoid turning all loads on or off at the same time.

Claim 3 calls for a process for managing total power absorbed of one or more appliances comprising the steps of assessing for each appliance an energy consumption profile of the one or more appliances corresponding to its setting, summing the energy consumption profiles to determine if their sum leads to one or more peaks in power demand, and providing one or more new energy consumption profiles to the one or more appliances for leveling the total power absorbed by the one or more appliances, wherein the appliances are controlled through on-off switching and are synchronized for organizing the on-off switching of single appliances or components in order to limit peaks of power demand, each on-off switching is based on a duty cycle, and a synchronizer puts in a sequence all the different duty cycles starting from the one related to the load with a higher power level, then organizes them inside a selected period of control, each duty cycle being placed in a precise position inside the period of control to avoid unnecessary simultaneous activation of loads.

Claim 8 calls for a system for managing and curtailing power absorbed of one or more appliances, each appliance having a user interface connected to a control unit for setting working parameters of the appliance, wherein the control unit is adapted to assess, for each appliance, an

energy consumption profile corresponding to its setting, the control unit being adapted to sum the energy consumption profiles in order to check if their sum leads to one or more peaks in the power demand and to provide one or more new energy consumption profiles in order to level or reduce the total power absorbed by the one or more appliances or components thereof, wherein appliances controlled through on-off switching further comprise a control circuit adapted to synchronize the appliances for organizing the on-off switching of single appliances in order to limit peaks of energy demand, each on-off switching is based on a duty cycle, and a synchronizer is adapted to put in a sequence all the different duty cycles starting from the one related to the load with a higher power level, and to organize them inside the selected period of control, each duty cycle being placed in a precise position inside the period of control to avoid unnecessary simultaneous activation of loads.

The rejection of claims 3 and 8 over the asserted combination of Ehlers '438 and Culp '619 should be overturned since the combination is improper, and does not reach the claimed invention.

1. The combination of Ehlers '438 and Culp '619 is improper, which removes the basis for the obviousness rejection.

The combination of Ehlers '438 and Culp '619 is not tenable as there is no motivation, suggestion or teaching to make the combination.

The standards for a finding of obviousness must be strictly adhered to. Simply citing one or more prior art references that illustrate different facets of the invention and then concluding that it would be obvious to combine the references to create the applicant's invention is wholly inadequate.

A claimed invention is unpatentable if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art....The

ultimate determination of whether an invention would have been obvious under 35 U.S.C. §103(a) is **a legal conclusion based on underlying findings of fact.**²

A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field....Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher."

Most if not all inventions arise from a combination of old elements....Thus, every element of a claimed invention may often be found in the prior art....However, **identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention**....Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, **there must be some motivation, suggestion or teaching of the desirability of making the specific combination** that was made by the applicant....Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference.

The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved....In addition, the teaching, motivation or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references....The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art....Whether the Patent Office Examiner relies on an express or an implicit showing, **the Examiner must provide particular findings**

² The underlying factual inquiries include (1) the scope and content of the prior art; (2) the level of ordinary skill in the prior art; and (3) the differences between the claimed invention and the prior art. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 15 L. Ed. 2d 545, 86 S. Ct. 684 (1966).

related thereto....Broad conclusory statements standing alone are not "evidence." *In Re Werner Kotzab*, 217 F.3d 1365; 55 U.S.P.Q.2d (BNA) 1313 (Fed. Cir. 2000)(citations omitted)(emphasis added).

The Examiner has failed to identify any motivation, suggestion, or teaching of the desirability of combining Ehlers '438 with Culp '619 to arrive at Applicants' invention. There has been no statement identified in either reference, there has been no discussion of the knowledge of one of ordinary skill in the art or the nature of the problem to be solved, there has been no identification of what the teachings of Ehlers '438 and Culp '619, the knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to one of ordinary skill in the art as required for a showing of motivation. The Examiner has failed to provide any particular findings related to any motivation, suggestion, or teaching of the desirability of combining Ehlers '438 with Culp '619. Indeed, such motivation, suggestion, or teaching is entirely lacking, and contraindicated by the teachings of both references.

Culp '619 teaches a sequencing of load on-off times based solely upon the magnitude of the power consumption of each load and the desire to evenly space the on and off times. Ehlers '438 teaches turning loads on or off according to preestablished criteria such as electricity rates, the importance of operating the load, contract-based power consumption limits, and the like, with the power utility initiating a turn on or turn off command. These two systems are incompatible. Sequencing the on and off times of a load based on the magnitude of the power consumption and the even spacing of the on and off times, as taught by Culp '619, would be incompatible and unworkable with a system in which on and off times are determined by other factors which would very likely lead to uneven load selection and on and off time sequencing, as taught by Ehlers '438.

The Examiner conclusively asserts, without any support, that it would have been obvious to modify Ehlers '438 with the teachings of Culp '619 "to include a process wherein a synchronizer is adapted to put in a sequence all the different duty cycles starting from the one

related to the load with a higher power level, and is adapted to organize them inside the selected period of control, each duty cycle being placed in a precise position inside the period of control. It is desirable, during a load cycling routine, to spread the off times uniformly throughout the period to minimize the energy consumption at any given instant in time during the interval. Thus, it is not desirable to have all the loads on at a given instant of time...." However, as discussed above, Ehlers '438 and Culp '619 are incompatible. There is no motivation, suggestion, or teaching to combine the references.

The Examiner's assertion that it would have been obvious to modify Ehlers '438 with Culp '619 is nothing more than a conclusory statement without support. Indeed, the Examiner simply parrots the language of claims 3 and 8, and concludes that it would have been obvious to combine Ehlers '438 with Culp '619 in order to arrive at the limitations of claims 3 and 8. Such conclusory assertions are not evidence.

The Examiner has "cherry-picked" elements from various references, and relied upon "broad conclusory statements standing alone," which can only lead to the conclusion that the Examiner is simply relying on impermissible hindsight reconstruction of Applicants' invention.

2. The combination of Ehlers '438 and Culp '619 does not reach the claimed invention.

Even if the combination of Ehlers '438 and Culp '619 were proper, the combination still would not reach Applicants' invention of claims 3 and 8.

Group C. Claim 3

As discussed above, Ehlers '438 does not disclose the establishment of power consumption profiles for the power consuming devices, the summing of such profiles, or the generation of new energy consumption profiles for leveling the total power consumed by the power consuming devices, as called for in claim 1. Similarly, Culp '619 does not disclose these elements. Therefore, the combination of Ehlers '438 and Culp '619 does not disclose the

invention of claim 3, which also call for the establishment of power consumption profiles for the power consuming devices, the summing of such profiles, and the generation of new energy consumption profiles for leveling the total power consumed by the power consuming devices. Furthermore, at best the combination of Ehlers '438 and Culp '619 would be equivalent to a system for the sequencing of load on-off times based upon the magnitude of the power consumption of each load, the desire to evenly space the on and off times, applicable electricity rates, the importance of operating the load, and contract-based power consumption limits, with the power utility initiating a turn on or turn off command. This is not the invention of claim 3.

Group D. Claim 8

As with claim 1, Ehlers '438 does not disclose the establishment of power consumption profiles for the power consuming devices, the summing of such profiles, or the generation of new energy consumption profiles for leveling the total power consumed by the power consuming devices, as called for in claim 6. Similarly, Culp '619 does not disclose these elements. Therefore, the combination of Ehlers '438 and Culp '619 does not disclose the invention of claim 8, which also call for the establishment of power consumption profiles for the power consuming devices, the summing of such profiles, and the generation of new energy consumption profiles for leveling the total power consumed by the power consuming devices. Again, at best the combination of Ehlers '438 and Culp '619 would be equivalent to a system for the sequencing of load on-off times based upon the magnitude of the power consumption of each load, the desire to evenly space the on and off times, applicable electricity rates, the importance of operating the load, and contract-based power consumption limits, with the power utility initiating a turn on or turn off command. This is not the invention of claim 8.

Claims 3 and 8 are patentable over Ehlers '438 in view of Culp '619. The rejection of claims 3 and 8 under 35 U.S.C. §103(a) should be overturned.

C. Claims 5 and 10 are not obvious over U.S. Patent No. 5,572,438 to Ehlers et al. in view of U.S. Patent No. 6,519,509 to Nierlich et al.

Claims 5 and 10 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Ehlers '438 in view of U.S. Patent No. 6,519,509 to Nierlich et al. The rejection is traversed.

Nierlich '509 discloses a system of monitoring and controlling remotely-located loads by using an Internet-based network of communication devices which exchange open market energy prices as a basis for optimizing power distribution and use. Nierlich '509 does not disclose summing of power consumption profiles for power consuming devices, or the generation of new energy consumption profiles for leveling the total power consumed by a plurality of power consuming devices.

Claim 5 calls for a process for managing total power absorbed of one or more appliances comprising the steps of assessing for each appliance an energy consumption profile of the one or more appliances corresponding to its setting, summing the energy consumption profiles to determine if their sum leads to one or more peaks in power demand, and providing one or more new energy consumption profiles to the one or more appliances for leveling the total power absorbed by the one or more appliances, wherein at least one of the new energy consumption profiles is based on a delayed switching on one of the appliances or components thereof, and, on the basis of the new leveled energy consumption profiles, a signal related to future energy consumption profiles is provided, such signal being adapted to be used by a control unit which supervises more appliances and/or a utility company in order to have a forecast for future total energy consumption on the mains.

Claim 10 calls for a system for managing and curtailing power absorbed of one or more appliances, each appliance having a user interface connected to a control unit for setting working parameters of the appliance, wherein the control unit is adapted to assess, for each appliance, an energy consumption profile corresponding to its setting, the control unit being adapted to sum

the energy consumption profiles in order to check if their sum leads to one or more peaks in the power demand and to provide one or more new energy consumption profiles in order to level or reduce the total power absorbed by the one or more appliances or components thereof, wherein the control unit is adapted to provide one or more new energy consumption profiles based on a delayed switching on one of the appliances or components thereof, and the control unit is adapted to provide, on the basis of the new leveled energy consumption profiles, a signal related to future energy consumption profiles, such signal being adapted to be used by a control unit supervising more appliances and/or a utility company in order to have a forecast for future total energy consumption on the mains.

The rejection of claims 5 and 10 over the asserted combination of Ehlers '438 and Nierlich '509 should be overturned since the combination is improper, and does not reach the claimed invention.

1. The combination of Ehlers '438 and Nierlich '509 is improper, which removes the basis for the obviousness rejection.

Again, the Examiner has failed to identify any motivation, suggestion, or teaching of the desirability of combining Ehlers '438 with Nierlich '509 to arrive at Applicants' invention. The Examiner simply asserts, without any support, that it would have been obvious to modify Ehlers '438 with the teachings of Nierlich '509 "to include a process on the basis of the new leveled energy consumption profiles, a signal related to future energy consumption profiles is provided, such signal being adapted to be used by a control unit which supervises more appliances and/or a utility company in order to have a forecast for future total energy consumption on the mains; which is useful for anticipating demand peaks and curtailment scheduling...." However, since energy prices are one of the factors utilized by the system of Ehlers '438, there would be no motivation to consider modifying the system of Ehlers '438 with a system that simply does the same, i. e. the system of Nierlich '509.

The Examiner's assertion that it would have been obvious to modify Ehlers '438 with Nierlich '509 is nothing more than a conclusory statement without support. Indeed, the Examiner simply parrots the language of claims 5 and 10, and concludes that it would have been obvious to combine Ehlers '438 with Nierlich '509 in order to arrive at the limitations of claims 5 and 10. Such conclusory assertions are not evidence.

The Examiner has "cherry-picked" elements from Nierlich '509 to add to Ehlers '438, and relied upon "broad conclusory statements standing alone," which can only lead to the conclusion that the Examiner is simply relying on impermissible hindsight reconstruction of Applicants' invention.

2. The combination of Ehlers '438 and Nierlich '509 does not reach the claimed invention.

Even if the combination of Ehlers '438 and Nierlich '509 were proper, the combination still would not reach Applicants' invention of claims 5 and 10.

Group D. Claim 5

As discussed above, Ehlers '438 does not disclose the summing of power consumption profiles for the power consuming devices, or the generation of new energy consumption profiles for leveling the total power consumed by the power consuming devices, as called for in claim 1. Similarly, Nierlich '509 does not disclose these elements. Therefore, the combination of Ehlers '438 and Nierlich '509 does not disclose the invention of claim 1, and claim 5, which depends from claim 1, which call for the summing of power consumption profiles for the power consuming devices, and the generation of new energy consumption profiles for leveling the total power consumed by the power consuming devices. Furthermore, at best the combination of Ehlers '438 and Nierlich '509 would be equivalent to a system for monitoring and controlling remotely-located loads by using an Internet-based network of communication devices exchanging open market energy prices, and turning the loads on or off according to preestablished criteria such as the open market energy prices, the importance of operating the

load, and contract-based power consumption limits, in order to optimize power distribution and use, with the power utility initiating a turn on or turn off command. This is not the invention of claim 5.

Group E. Claim 10

As with claim 1, Ehlers '438 does not disclose the summing of power consumption profiles for the power consuming devices, or the generation of new energy consumption profiles for leveling the total power consumed by the power consuming devices, as called for in claim 6. Similarly, Nierlich '509 does not disclose these elements. Therefore, the combination of Ehlers '438 and Nierlich '509 does not disclose the invention of claim 6, and claim 10, which depends from claim 6, which call for the summing of power consumption profiles for the power consuming devices, and the generation of new energy consumption profiles for leveling the total power consumed by the power consuming devices. Furthermore, at best the combination of Ehlers '438 and Nierlich '509 would be equivalent to a system for monitoring and controlling remotely-located loads by using an Internet-based network of communication devices exchanging open market energy prices, and turning the loads on or off according to preestablished criteria such as the open market energy prices, the importance of operating the load, and contract-based power consumption limits, in order to optimize power distribution and use, with the power utility initiating a turn on or turn off command. This is not the invention of claim 10.

Claims 5 and 10 are patentable over Ehlers '438 in view of Nierlich '509. The rejection of claims 5 and 10 under 35 U.S.C. §103(a) should be overturned.

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CONCLUSION

In view of the foregoing, it is submitted that the continuing rejection of claims 1-14 is improper and should not be sustained. Therefore, a reversal of the rejection of claims 1-14 is respectfully requested.

Respectfully submitted,
GIANPIERO SANTACATTERINA, ET AL.

Dated: August 29, 2006

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VIII. CLAIMS APPENDIX

1. A process for managing total power absorbed of one or more appliances, the process comprising the steps of:
 - assessing for each appliance an energy consumption profile of the one or more appliances corresponding to its setting;
 - summing the energy consumption profiles to determine if their sum leads to one or more peaks in power demand; and
 - providing one or more new energy consumption profiles to the one or more appliances for leveling the total power absorbed by the one or more appliances.
2. The process according to claim 1, wherein the appliances are controlled through on-off switching and wherein the appliances are synchronized for organizing the on-off switching of single appliances or components in order to limit peaks of power demand.
3. The process according to claim 2, wherein each on-off switching is based on a duty cycle and wherein a synchronizer puts in a sequence all the different duty cycles starting from the one related to the load with a higher power level, then organizes them inside a selected period of control, each duty cycle being placed in a precise position inside the period of control to avoid unnecessary simultaneous activation of loads.
4. The process according to claim 1, wherein at least one of the new energy consumption profiles is based on a delayed switching on one of the appliances or components thereof.
5. The process according to claim 4, wherein on the basis of the new leveled energy consumption profiles, a signal related to future energy consumption profiles is provided, such signal being adapted to be used by a control unit which supervises more appliances and/or a utility company in order to have a forecast for future total energy consumption on the mains.
6. A system for managing and curtailing power absorbed of one or more appliances, each appliance having a user interface connected to a control unit for setting working parameters of the appliance, wherein the control unit is adapted to assess, for each appliance, an energy consumption

profile corresponding to its setting, the control unit being adapted to sum the energy consumption profiles in order to check if their sum leads to one or more peaks in the power demand and to provide one or more new energy consumption profiles in order to level or reduce the total power absorbed by the one or more appliances or components thereof.

7. The system according to claim 6, wherein appliances controlled through on-off switching further comprise a control circuit adapted to synchronize the appliances for organizing the on-off switching of single appliances in order to limit peaks of energy demand.

8. The system according to claim 7, wherein each on-off switching is based on a duty cycle and wherein a synchronizer is adapted to put in a sequence all the different duty cycles starting from the one related to the load with a higher power level, and to organize them inside the selected period of control, each duty cycle being placed in a precise position inside the period of control to avoid unnecessary simultaneous activation of loads.

9. The system according to claim 6, wherein the control unit is adapted to provide one or more new energy consumption profiles based on a delayed switching on one of the appliances or components thereof.

10. The system according to claim 9, wherein the control unit is adapted to provide, on the basis of the new leveled energy consumption profiles, a signal related to future energy consumption profiles, such signal being adapted to be used by a control unit supervising more appliances and/or a utility company in order to have a forecast for future total energy consumption on the mains.

11. The process according to claim 1, wherein leveling the total power absorbed comprises reducing the magnitude of the peaks of the total power absorbed.

12. The process according to claim 1, wherein leveling the total power absorbed comprises maintaining the summed energy consumption at approximately an average energy consumption.

13. The system according to claim 6, wherein reducing the total power absorbed by the one or more appliances or components comprises reducing the magnitude of the peaks of the total power absorbed.

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14. The system according to claim 6, wherein reducing the total power absorbed by the one or more appliances or components comprises maintaining the summed energy consumption at approximately an average energy consumption.

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IX. EVIDENCE APPENDIX

No evidence has been entered by the Examiner or Appellants into the record.

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X. RELATED PROCEEDINGS APPENDIX

There being no decision rendered by a court or the Board in any related proceeding, none is listed here.